

Application Number 10/756,407
Response to Office Action Dated April 20, 2006

Attorney Docket No. FS-F03223-01

Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended): A photothermographic material, comprising:

a support;

an image forming layer disposed on the support and containing a photosensitive silver halide, a non-photosensitive organic silver salt, a reducing agent, and a binder; and a silver-saving agent,

wherein silver iodide is contained in the photosensitive silver halide in an amount of 40 to 100 mol%,

wherein an image gradation of an image obtained by heat development is 2 to 4, the image gradation being expressed as the gradient between optical densities 2.0 and 0.25 of a characteristic curve as represented by the following equation:

$$\text{Gamma} = (\text{Optical density 2.0} - \text{Optical density 0.25}) / (\log (\text{Fog density} + \text{Exposure amount providing an optical density of 2.0}) - \log (\text{Fog density} + \text{Exposure amount providing an optical density of 0.25})), \text{ and}$$

wherein the photothermographic material is sensitive to ~~capable of being~~ exposed by a laser light source having a wavelength of 350 nm to 450 nm.

2. (Original): The photothermographic material of claim 1, wherein the image forming layer has a multilayered structure comprising at least a first image forming layer

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and a second image forming layer, and at least the first image forming layer contains the silver-saving agent, and the second image forming layer does not contain the silver-saving agent.

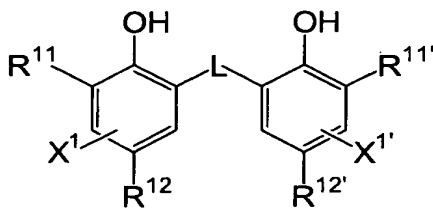
3. (Original): The photothermographic material of claim 2, wherein the first image forming layer containing the silver-saving agent is disposed closer to the support, and the second image forming layer not containing the silver-saving agent is disposed more distant from the support.

4. (Original): The photothermographic material of claim 2, wherein the first image forming layer containing the silver-saving agent is disposed more distant from the support, and the second image forming layer not containing the silver-saving agent is disposed closer to the support.

5. (Cancelled.)

6. (Original): The photothermographic material of claim 1, wherein the reducing agent contains a compound represented by the following formula (R):

Formula (R)



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wherein R^{11} and $R^{11'}$ each independently represent an alkyl group having 3 to 20 carbon atoms, in which a carbon atom bonding with a benzene ring is secondary or tertiary; R^{12} and $R^{12'}$ each independently represent a hydrogen atom or a group capable of being substituted on the benzene ring; L represents -S- or -CHR¹³, in which R^{13} represents a hydrogen atom or an alkyl group having 1 to 20 carbon atoms; and X^1 and $X^{1'}$ each independently represent a hydrogen atom or a group capable of being substituted on the benzene ring.

7. (Original): The photothermographic material of claim 1, further comprising a development accelerator.

8. (Canceled.)

9. (Canceled.)

10. (Previously presented): The photothermographic material of claim 1, wherein the laser light source is a blue semiconductor laser.

11. (Original): The photothermographic material of claim 1, wherein a total amount of coated silver including the photosensitive silver halide and the non-photosensitive organic silver salt is 0.1 to 3.0 g/m².

12. (Original): The photothermographic material of claim 1, wherein the

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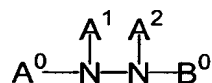
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reducing agent is contained in an amount of 0.1 to 3.0 g/m².

13. (Original): The photothermographic material of claim 1, wherein the reducing agent is contained in the image forming layer in an amount of 5 to 50 mol% per mole of silver on a surface having the image forming layer.

14. (Original): The photothermographic material of claim 1, wherein the silver-saving agent is a hydrazine derivative compound represented by the following formula (V):

Formula (V)



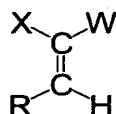
wherein A⁰ represents an aliphatic group, an aromatic group, a heterocyclic group, or -G⁰-D⁰, each of which may have a substituent; B⁰ represents a blocking group; one of A¹ and A² represents a hydrogen atom and the other represents a hydrogen atom, an acyl group, a sulfonyl group, or an oxalyl group; G⁰ represents -CO-, -COCO-, -CS-, -C(=NG¹D¹)-, -SO-, -SO₂-, or -P(O)(G¹D¹)-, in which G¹ represents a single bond, -O-, -S-, or -N(D¹)-, and D¹ represents an aliphatic group, an aromatic group, a heterocyclic group, or a hydrogen atom; and D⁰ represents one selected from the group consisting of a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, an amino group, an alkoxy group, an aryloxy group, an alkylthio group, and an arylthio group.

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15. (Original): The photothermographic material of claim 1, wherein the silver-saving agent is a vinyl compound represented by the following formula (VI):

Formula (VI)



wherein X represents an electron attracting group; W represents one selected from the group consisting of a hydrogen atom, an alkyl group, an alkenyl group, an alkynyl group, an aryl group, a heterocyclic group, a halogen atom, an acyl group, a thioacyl group, an oxalyl group, an oxyoxalyl group, a thiooxalyl group, an oxamoyl group, an oxycarbonyl group, a thiocarbonyl group, a carbamoyl group, a thiocarbamoyl group, a sulfonyl group, a sulfinyl group, an oxysulfinyl group, a thiosulfinyl group, a sulfamoyl group, an oxysulfinyl group, a thiosulfinyl group, a sulfinamoyl group, a phosphoryl group, a nitro group, an imino group, an N-carbonylimino group, an N-sulfinylimino group, a dicyanoethylene group, an ammonium group, a sulfonium group, a phosphonium group, a pyrylium group, and an immonium group; R represents one selected from the group consisting of a halogen atom, a hydroxyl group, an alkoxy group, an aryloxy group, a heterocyclic oxy group, an alkenyloxy group, an acyloxy group, an alkoxycarbonyloxy group, an aminocarbonyloxy group, a mercapto group, an alkylthio group, an arylthio group, a heterocyclic thio group, an alkenylthio group, an acylthio group, an alkoxycarbonylthio group, an aminocarbonylthio group, an organic or inorganic salt of a hydroxyl group or a mercapto group, an amino group, an alkylamino group, a cyclic amino group, an acylamino group, an oxycarbonylamino group, a

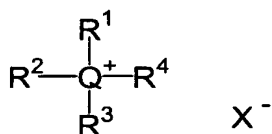
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heterocyclic group, a ureido group, and a sulfonamido group; and X and W, and X and R may bond with each other to form a ring.

16. (Original): The photothermographic material of claim 1, wherein the silver-saving agent is a quaternary onium compound represented by the following formula (VII):

Formula (VII)



wherein Q represents a nitrogen atom or a phosphorus atom; R¹, R², R³, and R⁴ each independently represent one selected from the group consisting of a hydrogen atom, an alkyl group, an alkenyl group, an alkynyl group, an aryl group, a heterocyclic group, and an amino group; X⁻ represents an anion; and R¹ to R⁴ may bond with each other to form a ring.

17. (Original): The photothermographic material of claim 1, wherein the silver-saving agent is contained in the image forming layer or a layer adjacent to the image forming layer in an amount of 10⁻⁵ to 1 mol per mole of the non-photosensitive organic silver salt.

18. (Previously presented): The photothermographic material of claim 1,

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wherein the silver iodide is contained in the photosensitive silver halide in an amount of 80 to 100 mol%.

19. (Previously presented): The photothermographic material of claim 1,
wherein the silver iodide is contained in the photosensitive silver halide in an amount of 90 to 100 mol%.